

Simulation Based Acquisition Conference



NDIA
NATIONAL DEFENSE
INSTITUTE

May 14-17, 2001
Springfield, VA

Leveraging Commercial Data Interchange Standards

16 May 2001

Ron Schuldt

Senior Staff Systems Architect

Lockheed Martin Enterprise Information Systems

ron.l.schuldt@lmco.com

Report Documentation Page		
Report Date 16052001	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle Leveraging Commercial Data Interchange Standards	Contract Number	
	Grant Number	
	Program Element Number	
Author(s) Schuldt, Ron	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) Lockheed Martin Enterprise Information Systems	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es) NDIA (National Defense Industrial Association 2111 Wilson Blvd., Ste. 400 Arlington, VA 22201-3061	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes Proceedings from 3rd Simulation Based Acquisition conference, 15-17 May 2001, sponsored by NDIA, The original document contains color images.		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 30		

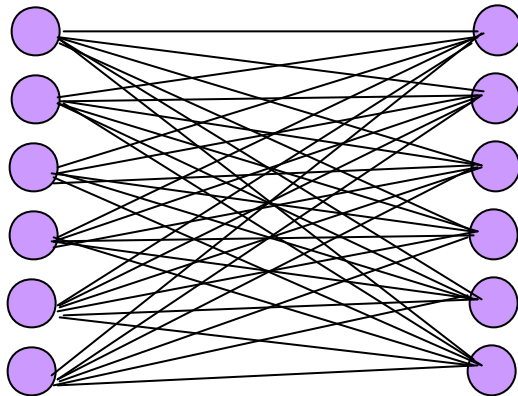
Agenda

- Why Specs and Standards?
- Why eXtensible Markup Language (XML)?
- XML's Envisioned Role
- XML Specs and Standards Framework
 - XML Foundation Specifications
 - XML Architecture Specifications
 - XML Content or “Payload” Standards
- Industry-wide Harmonization Across Standards

Why Specs and Standards?

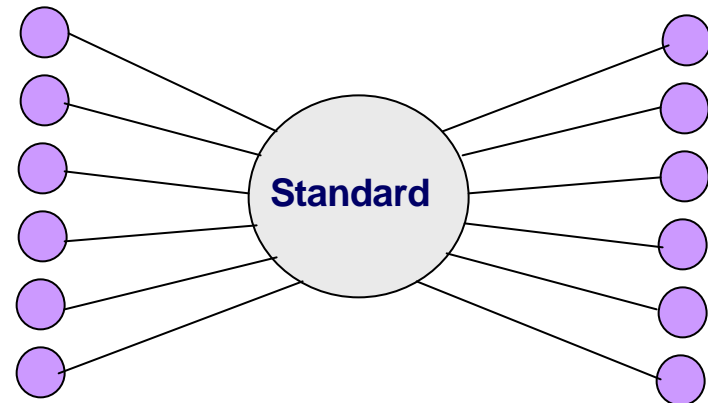
Data Content

N (N-1) Mappings – Point-to-Point



OR

2N Mappings – Industry Standard



According to the Gartner Group, 35-40% of all programming effort in a typical computing environment is devoted to developing and maintaining interfaces

Architecture

**Costly to build
interfacing applications**



OR

**Easier and less costly to
build interfacing applications**



Why eXtensible Markup Language (XML)?

“No Microsoft software product will remain untouched by XML”

Peter Plamondon, Mgr Developer Relations, Microsoft

“Starting with Oracle8i, ... all Oracle products will fully support XML ...”

<http://technet.oracle.com/tech/xml/>

“mySAP.com™ is built on e-business standards and technologies such as XML, HTML, HTTP, and Simple Object Access Protocol (SOAP) to ensure openness and interoperability.”

<http://www.sap.com/solutions/technology/index.htm>

Critical Mass Has Been Achieved

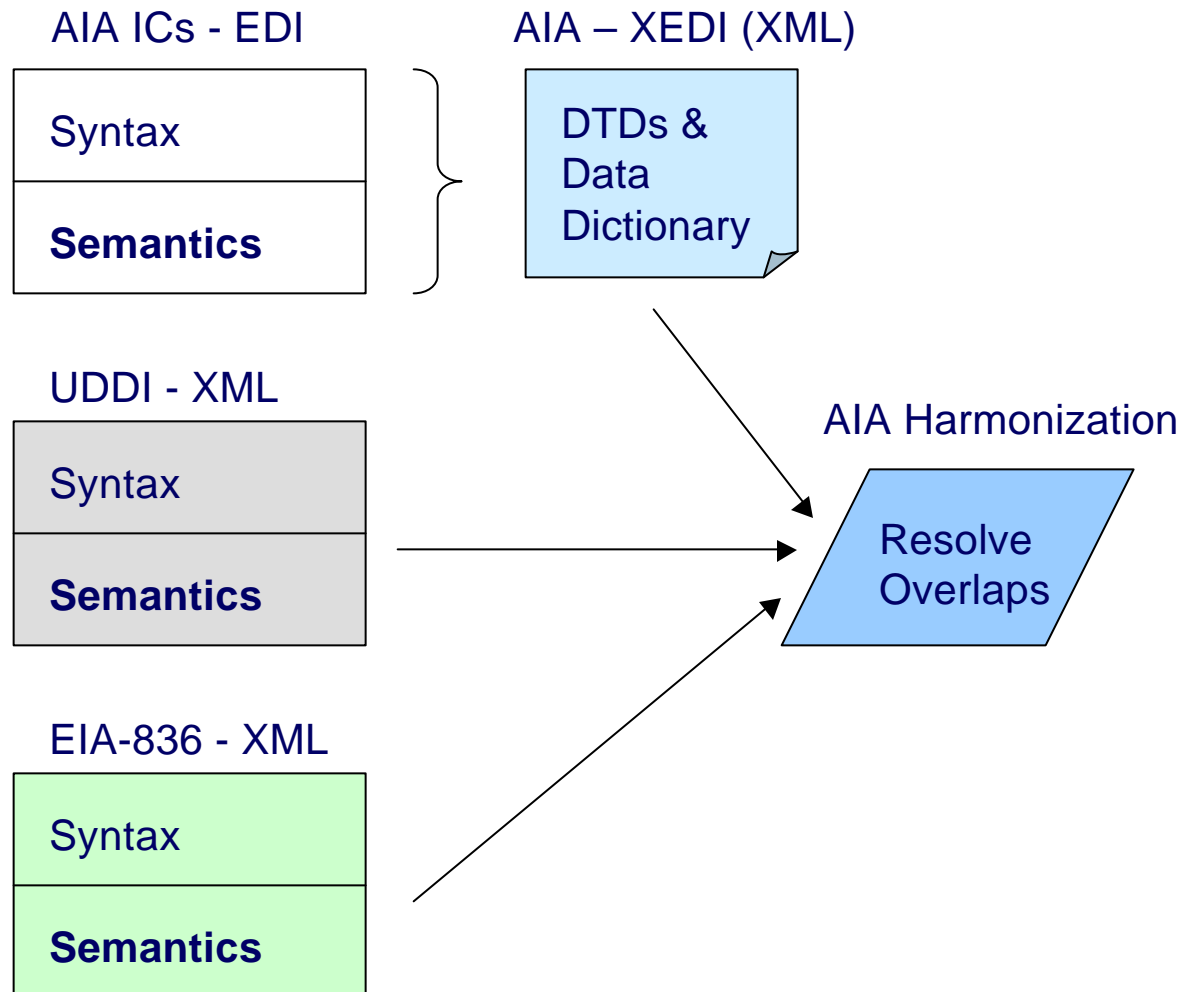
The Major Vendors Are XML Enabling Their Applications

Tiny Sample of Current/Future XML Standards

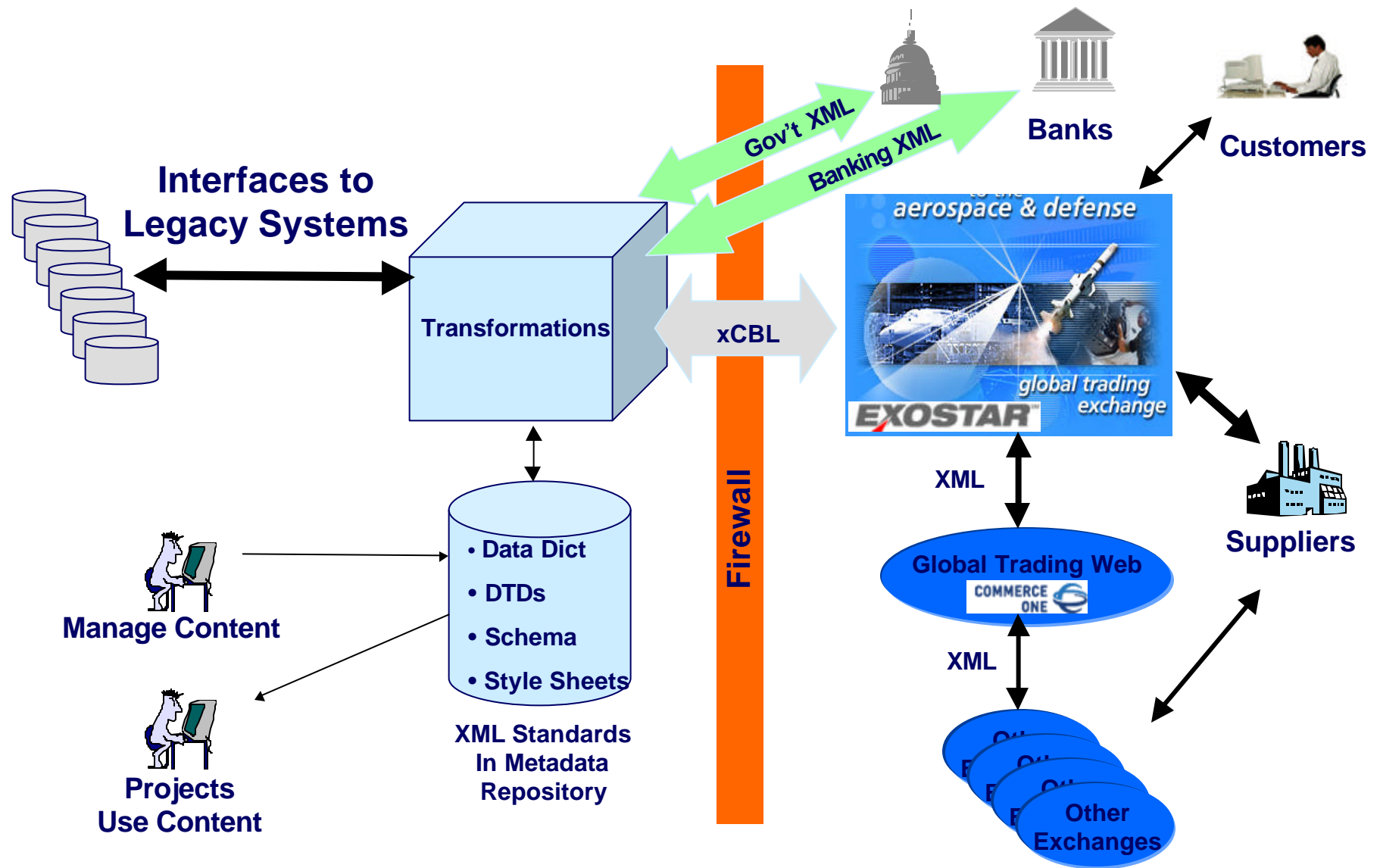
- HL7 – Health Care
- OTA – Open Travel Alliance
- IFX – Interactive Financial Exchange
- FPML – Financial Products
- EML – Election Markup Language
- HR-XML – Human Resources and Benefits
- RosettaNet – Information Technology Industry
- ACORD – XML for the Insurance Industry
- GML – Geography Markup Language
- MatML – Material Property Data Markup Language
- OMF – Weather Observation Markup Format

Syntax and Semantics in XML

Industry-wide Standards



XML's Envisioned Role



Two Basic Types of Exchange Documents

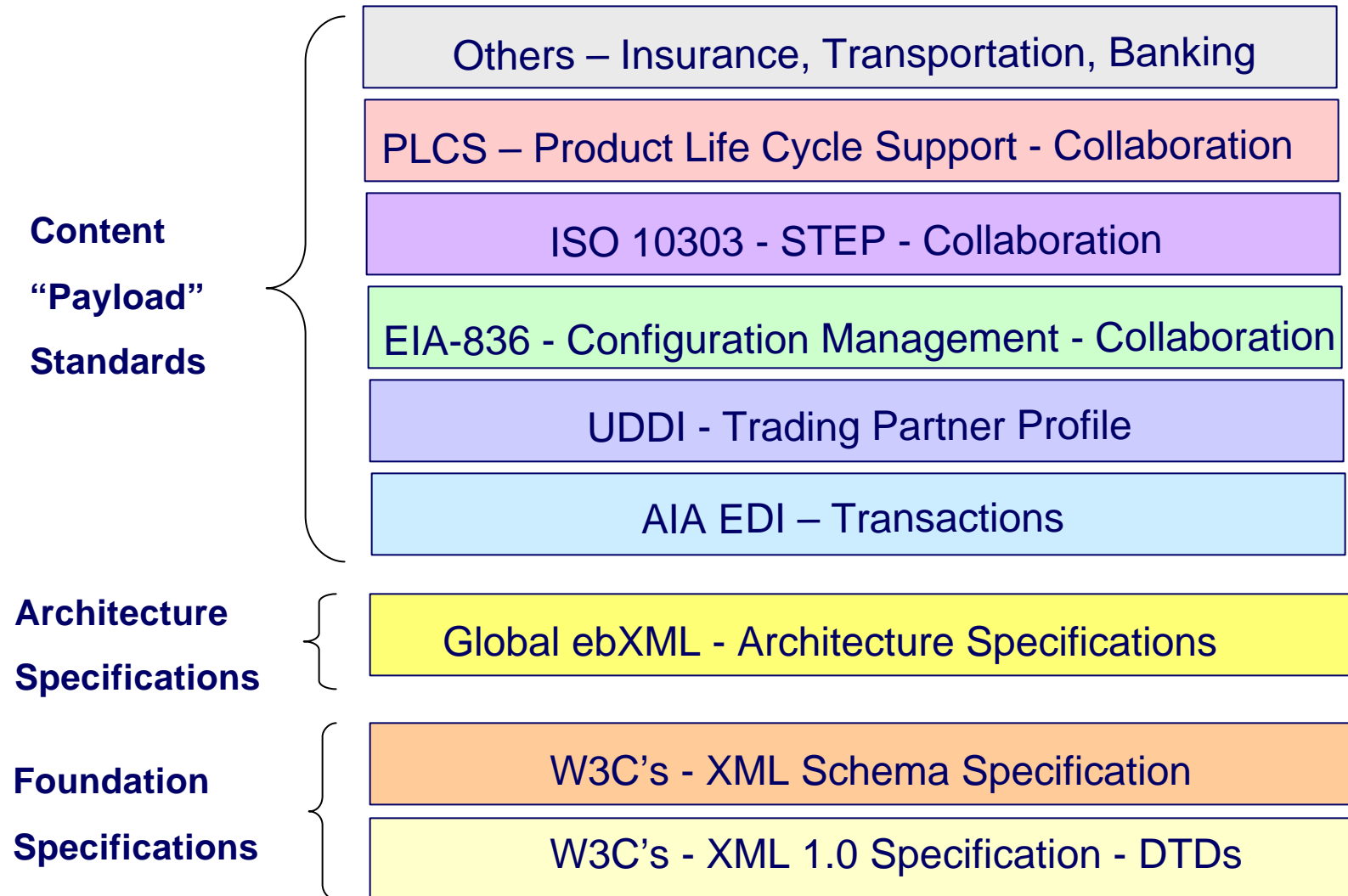
■ Transactions

- Purchase Orders
- Purchase Order Changes
- Purchase Order Acknowledgements
- Purchase Order Change Acknowledgements
- Invoices
- Remittance Advice
- Request for Quote
- Request for Quote Response
- Shipping Schedule
- Etc.

■ Collaboration Documents

- Mission Requirements
- Concept of Operations
- Specifications
- Product Designs
- Engineering Change Proposals
- Trade-off Studies
- Test Reports
- Meeting Minutes
- Plans
- Schedules
- Presentations
- Etc.

XML Specs and Standards Framework



W3C XML 1.0 Specification

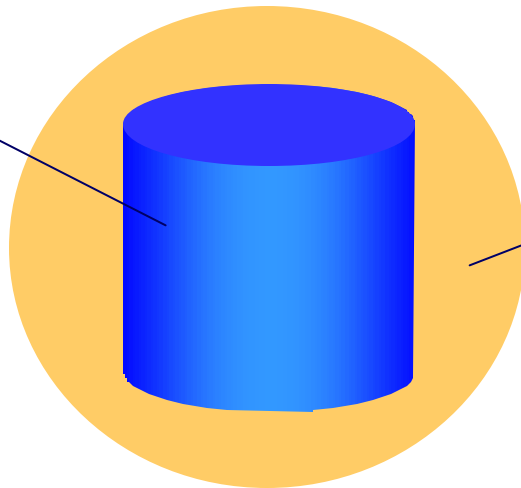
eXtensible Markup Language

XML 1.0 is the foundation standard recommended by W3C in February 1998 to describe other languages

- a metalanguage
- separates data content from its presentation
- derived from ISO 8879 (SGML)

Language

- semantics
- syntax



Business Rules & Methods

XML 1.0 specifies requirements of well-formed and valid XML documents - DTDs

W3C XML Schema Specification

Recommendation status as of May 2, 2001

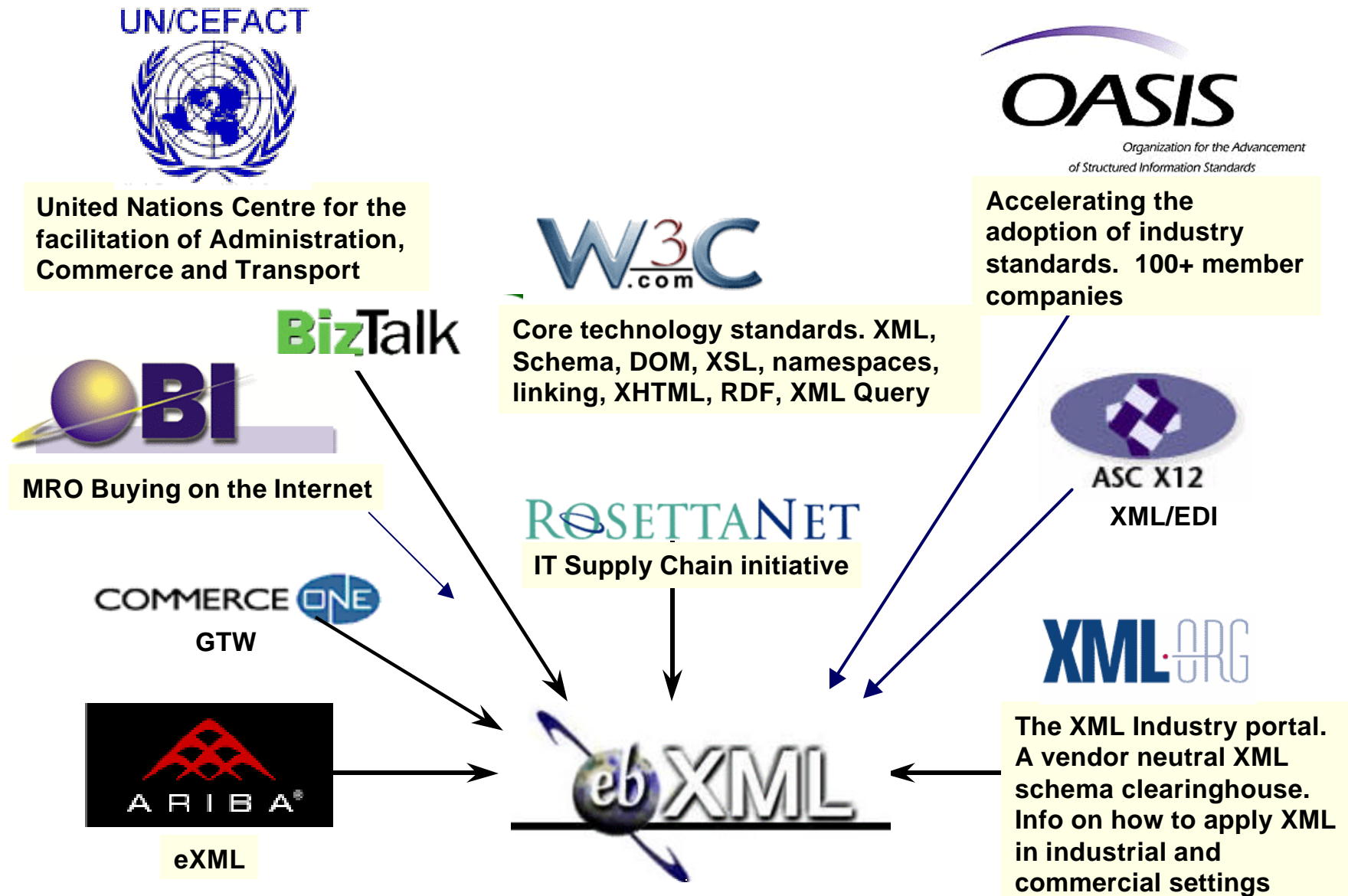
XML
Schema
Part 0
Primer

XML Schema
Part 1
Structures

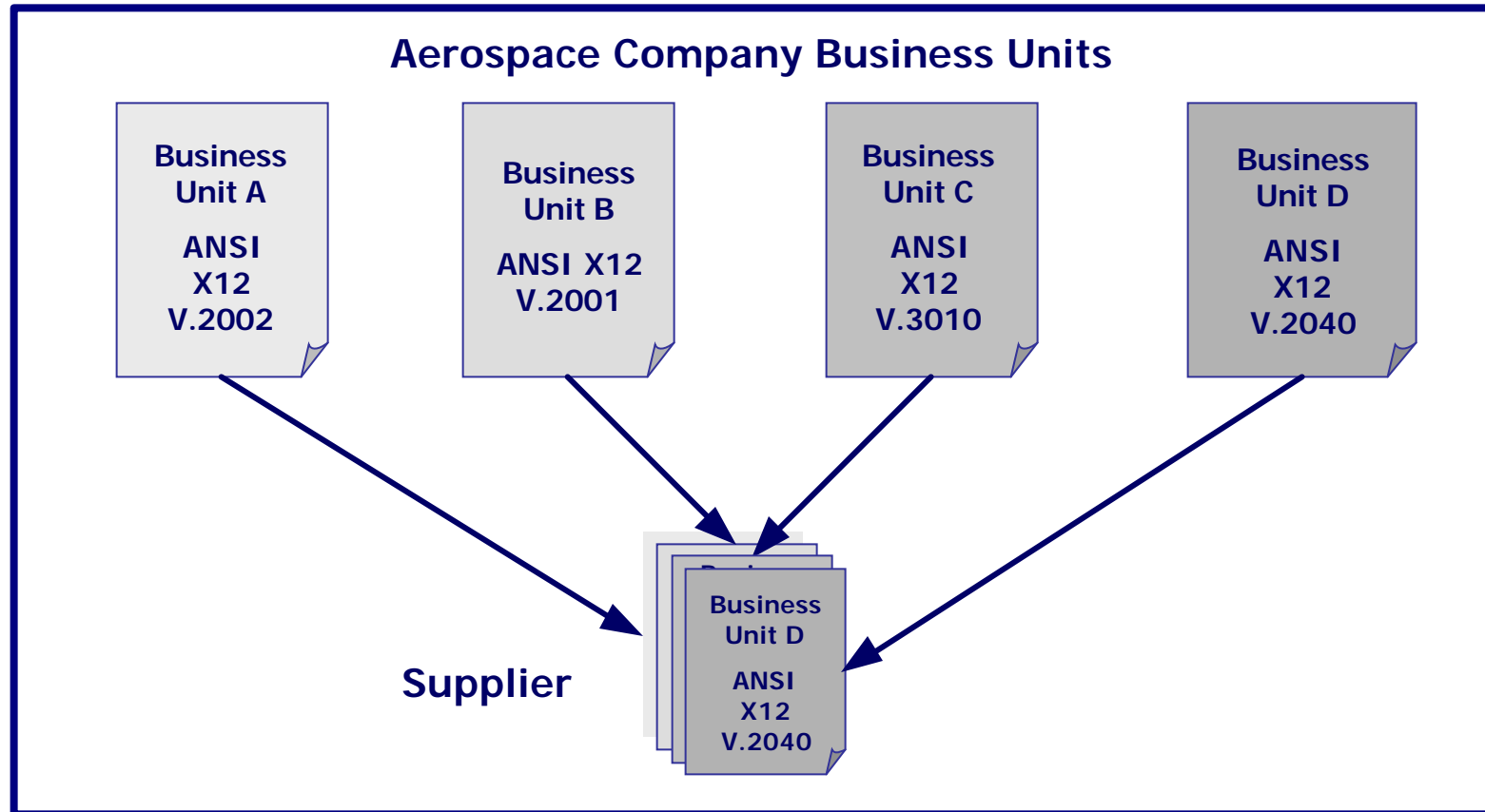
XML Schema
Part 2
Data Types

XML Schema enables **application-to-application integration** with **data integrity and validation checks** based on an open specification whereas previously the tasks were performed with proprietary solutions

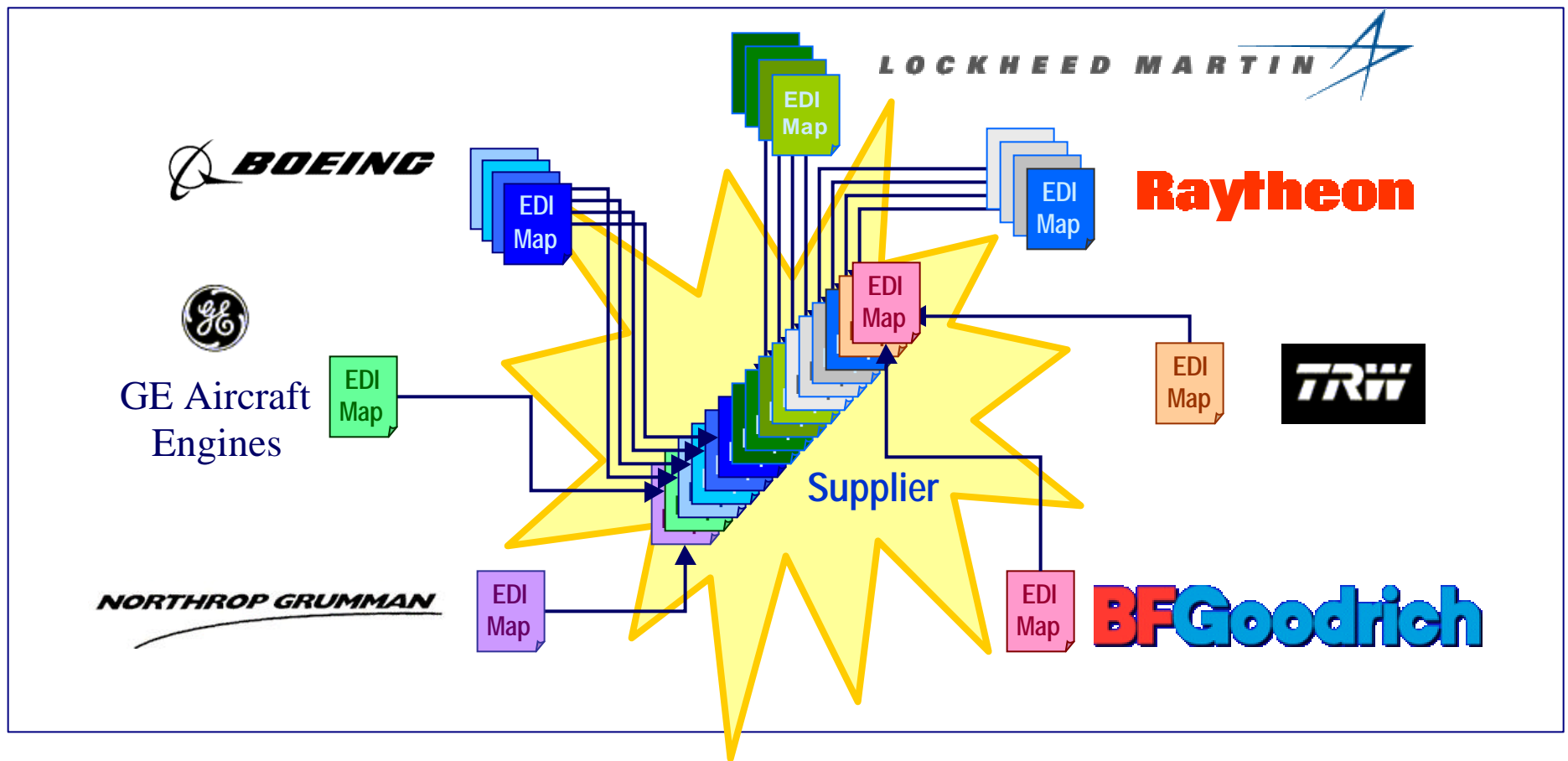
Global ebXML – Major Participants



The Transaction Content Problem

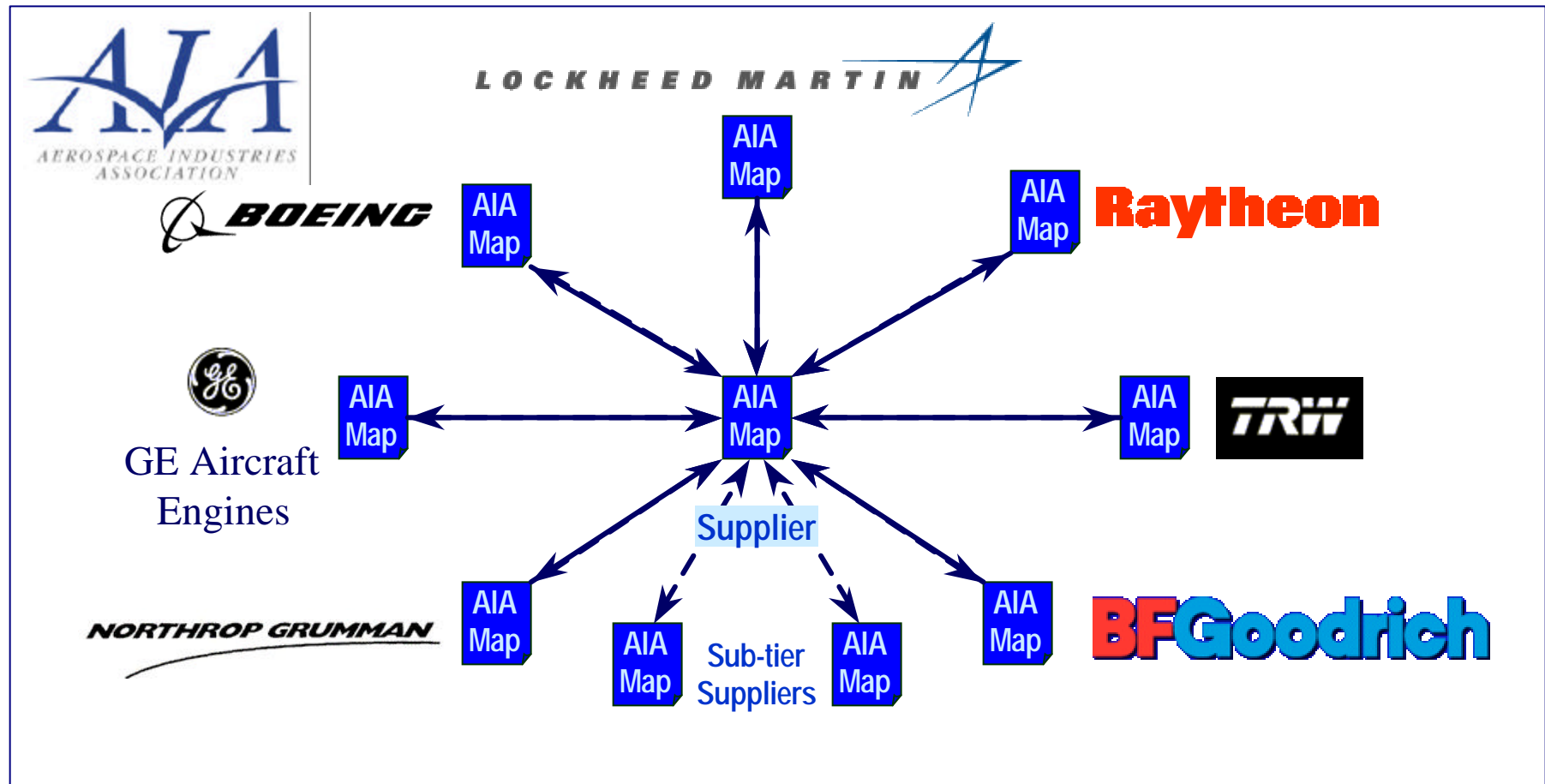


The Problem Magnified Across the Industry



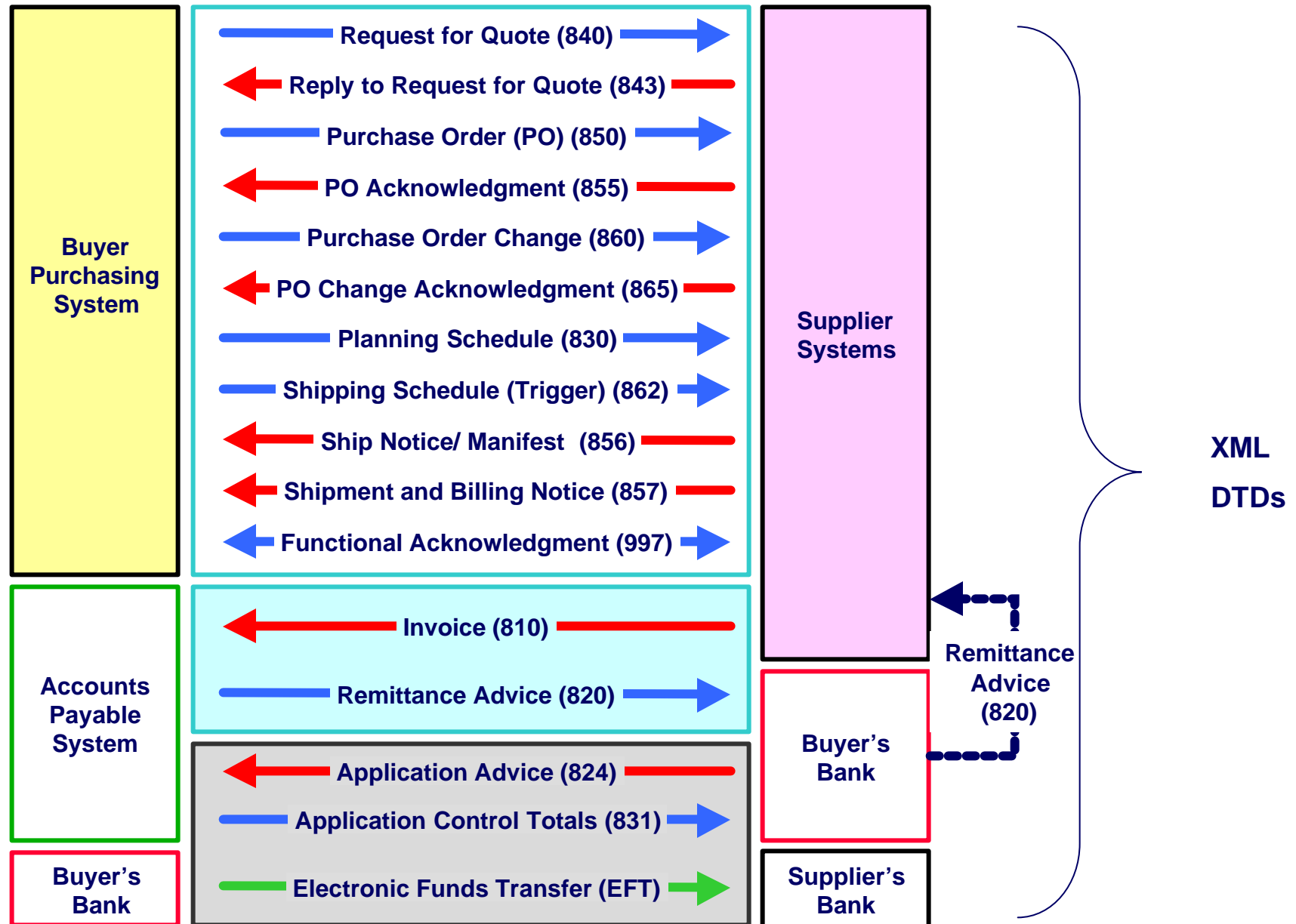
Adds substantial costs throughout supply chain

The Industry-wide Solution



Based on industry-wide best practices

AIA's Harmonized EDI Transactions



Universal Description Discovery Integration

Global single point to register your business

White Pages

- Who you are
- Where located
- How to contact you

Yellow Pages

- What products and services

Green Pages

- How to conduct business with you

<http://www.uddi.org/>

EIA-836 Standard

Electronic Industries Association EIA-836 *Standard Configuration Management Data Exchange and Interoperability*

Record of Authority Transfer

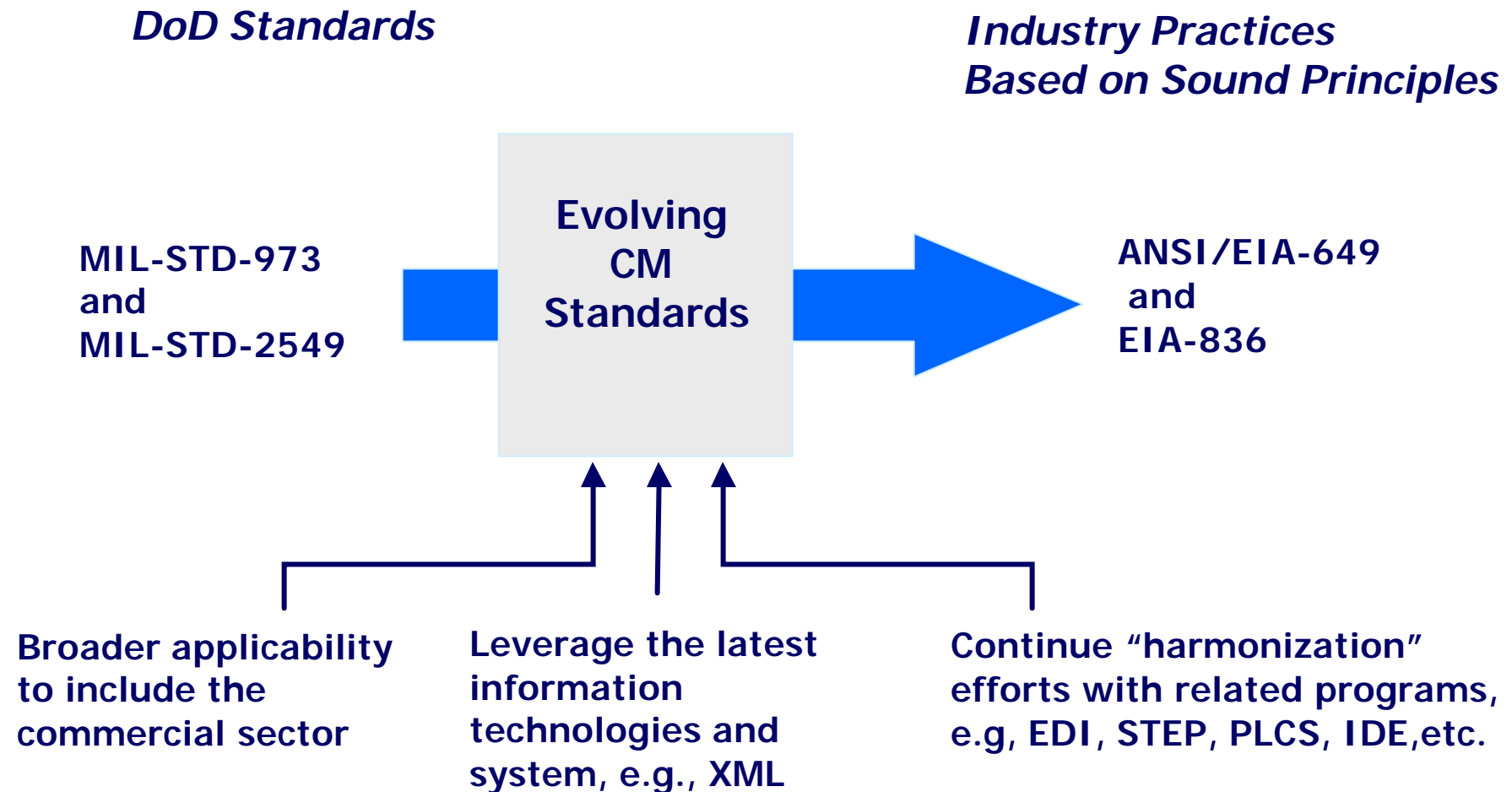


EIA-836 Record of Authority Metadata

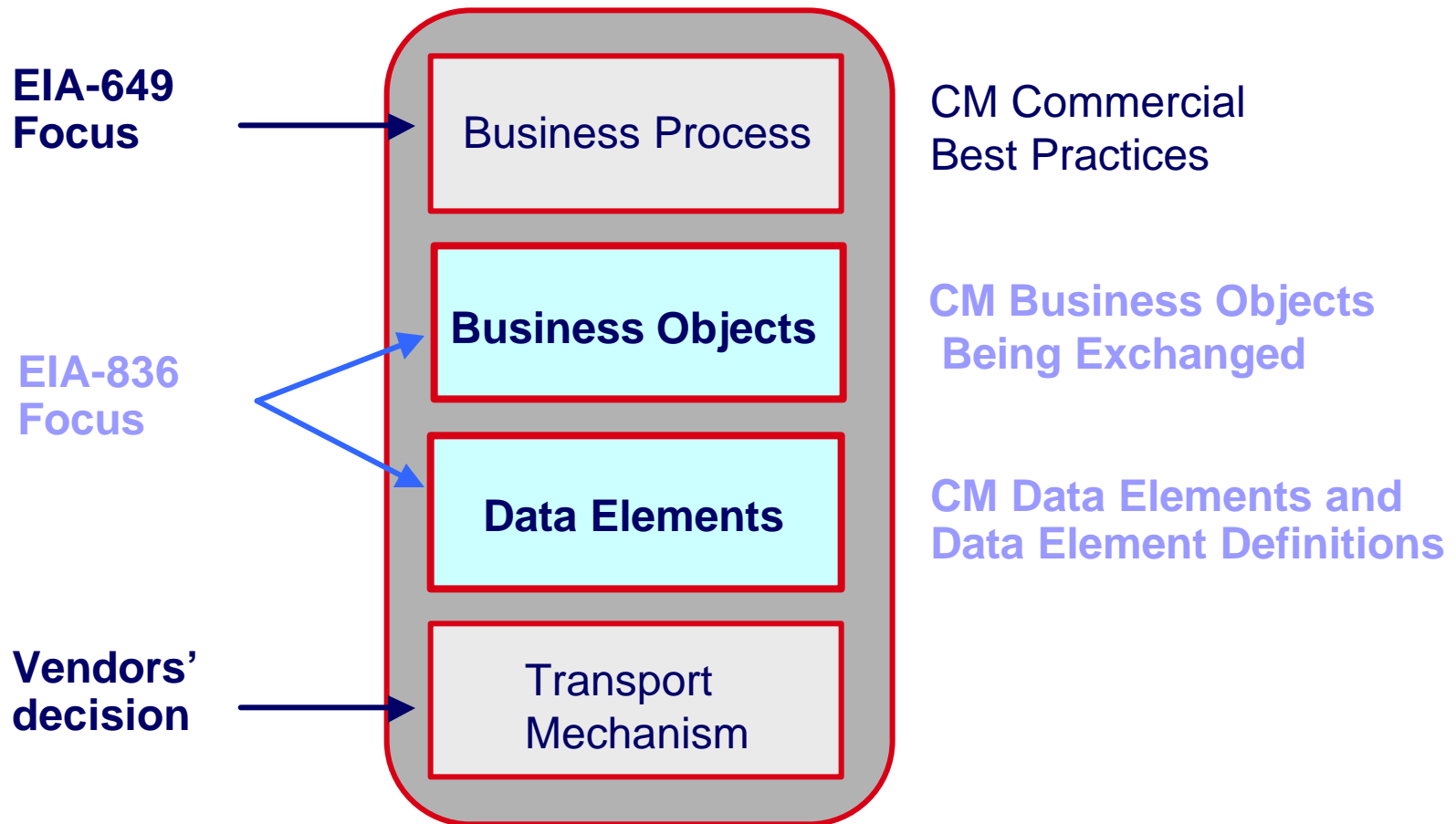
- **Document Change History**
- **Product Configuration History**
- **Change Actions/History**

Transfer of record of authority metadata is typically required when final production item is delivered and the data package is delivered from supplier to customer.

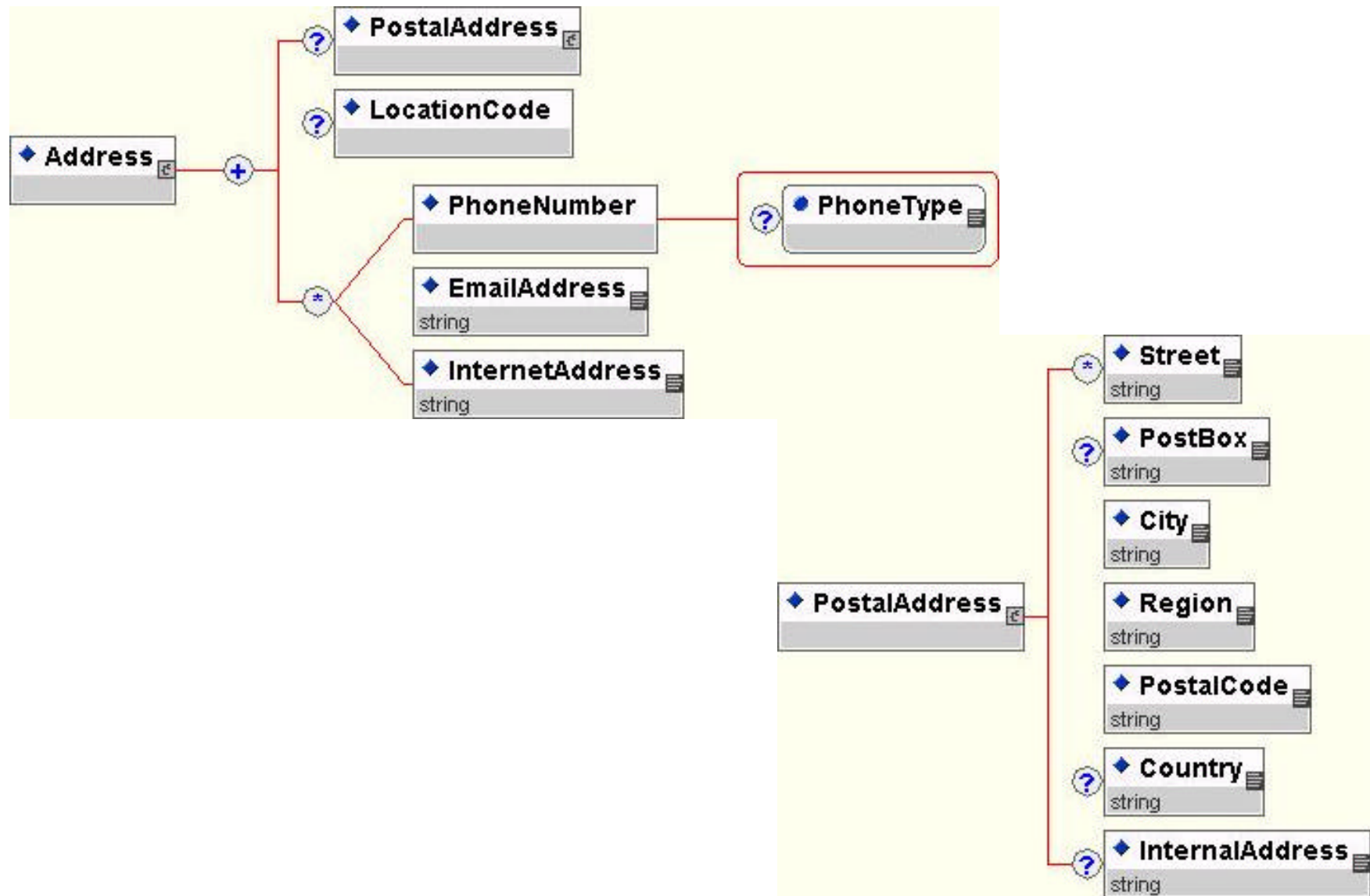
EIA-836 Background



EIA-836 Focus

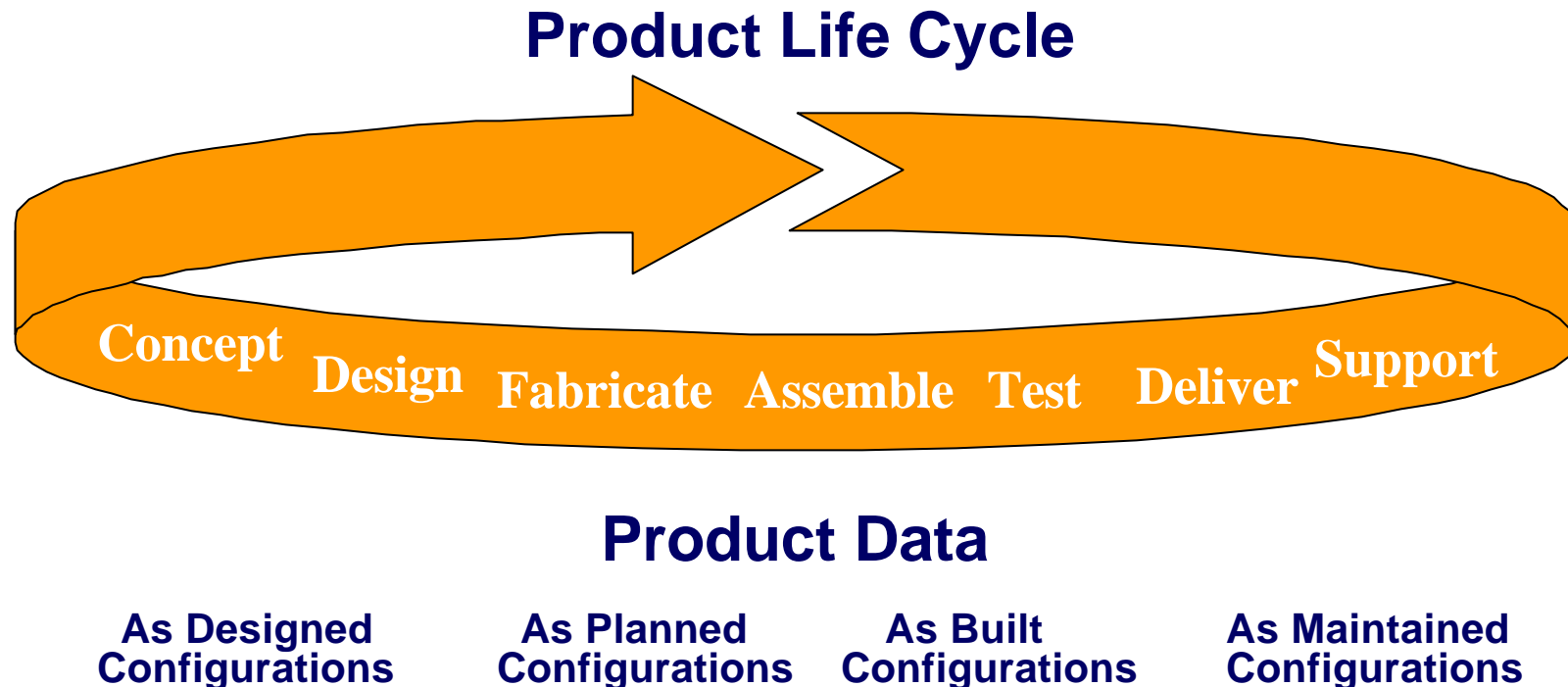


Example EIA-836 DTD for Address



ISO 10303 - STEP

STEP is an international standard (ISO 10303) that provides an unambiguous, computer interpretable definition of the physical and functional characteristics of a product throughout its life cycle



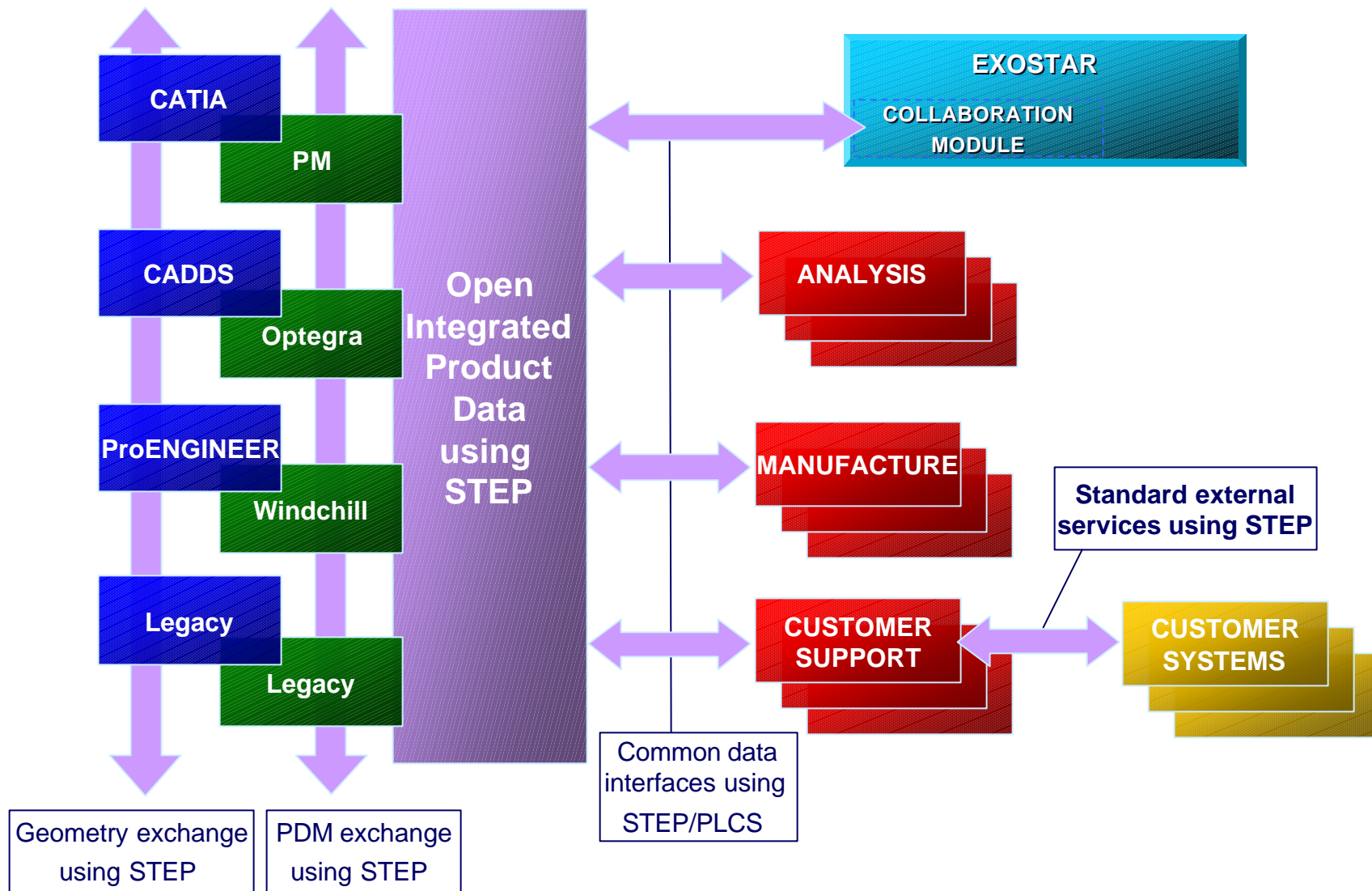
ISO 10303 - Part 28 will enable XMLized STEP

Product Life Cycle Support (PLCS)

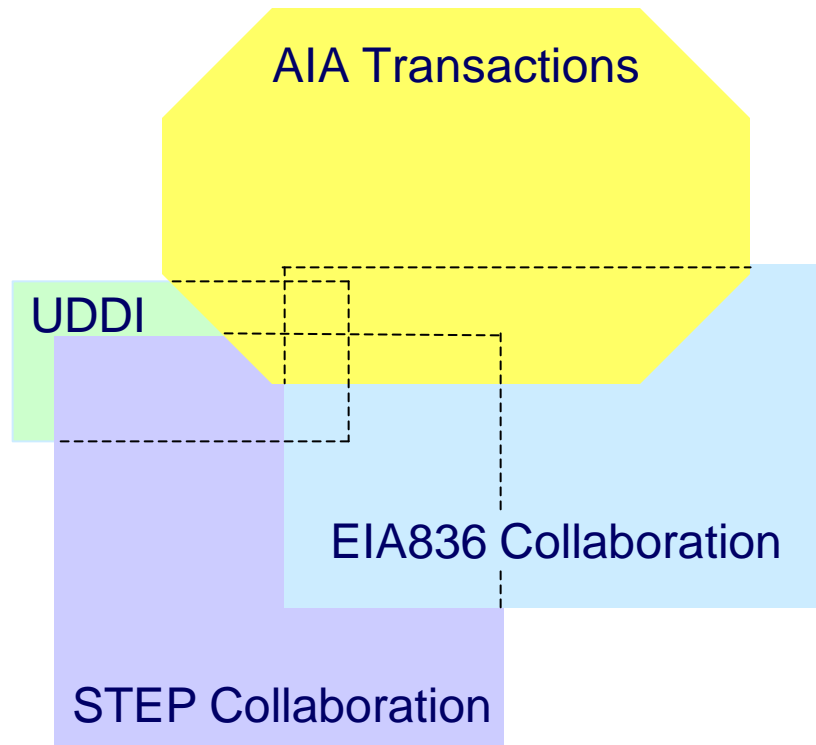
- **PLCS was formed to address the horizontal integration shortcomings of STEP**
- **A joint industry and government initiative to accelerate development of new standards for product support information**
- **PLCS Inc. established in 1999 by 14 leading private and public sector organizations**
- **An international project, managed within the ISO framework, to produce draft standard(s) within 3 years.**
- **PLCS utilizes ISO 10303 STEP - the **ST**andard for **E**xchange of **P**roduct model data and EIA-836**



STEP and PLCS in Context



Overlaps Require Harmonization



UDDI

- **Universal Unique ID (UUID)**
- Globally unique
- Supports many ID codes
- 128 bit hexadecimal (8 char AN)

EIA-836

- **Organization ID**
- Supports many ID codes
 - CAGE, DUNS, FSCM, etc.
- ID length not specified

AIA EDI

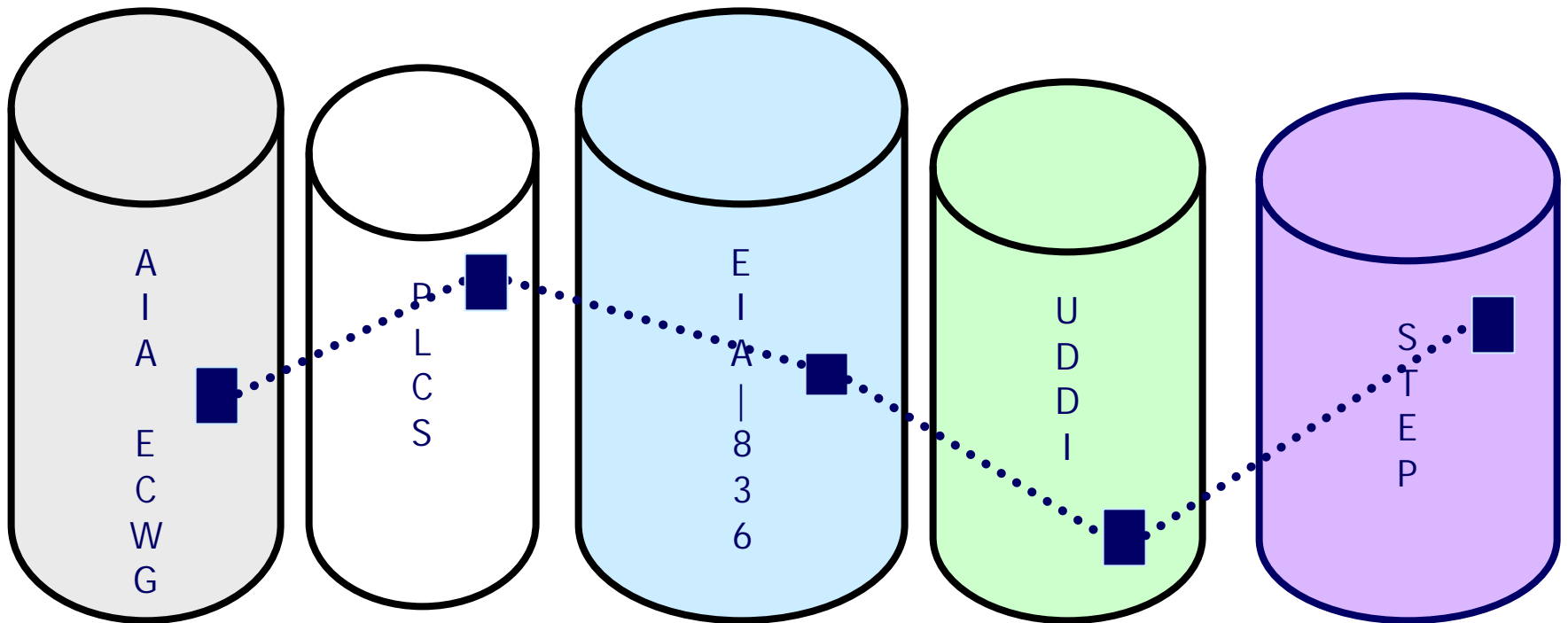
- **Originating Company Identifier**
- Supports many ID codes
 - CAGE, DUNS, FSCM, etc.
- ID length (10 char AN)

Example Overlaps

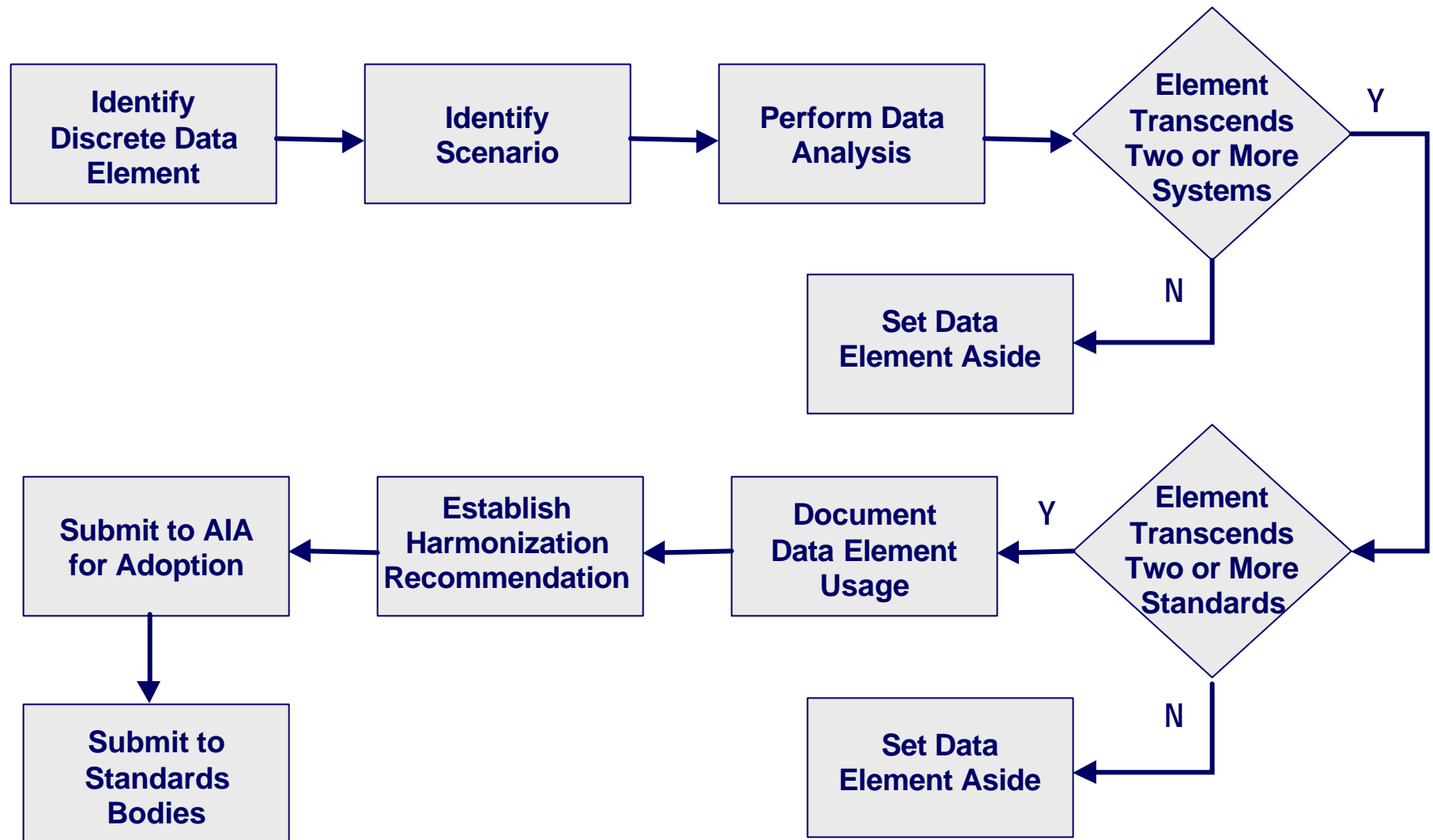
- Supplier ID
- Address
- Part Number

AIA proposing process for harmonizing overlaps between standards

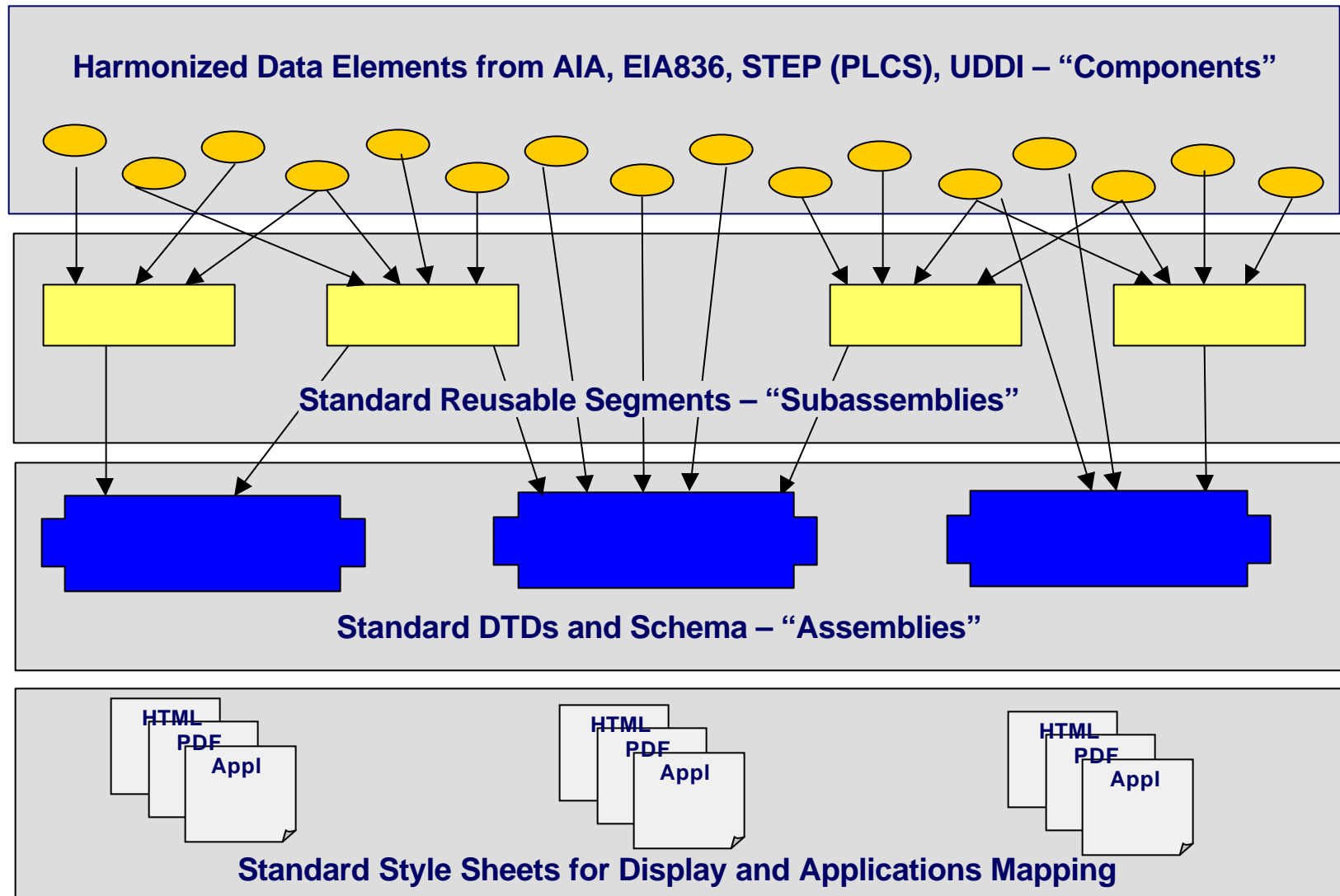
Connecting the Dots Across Silo Standards



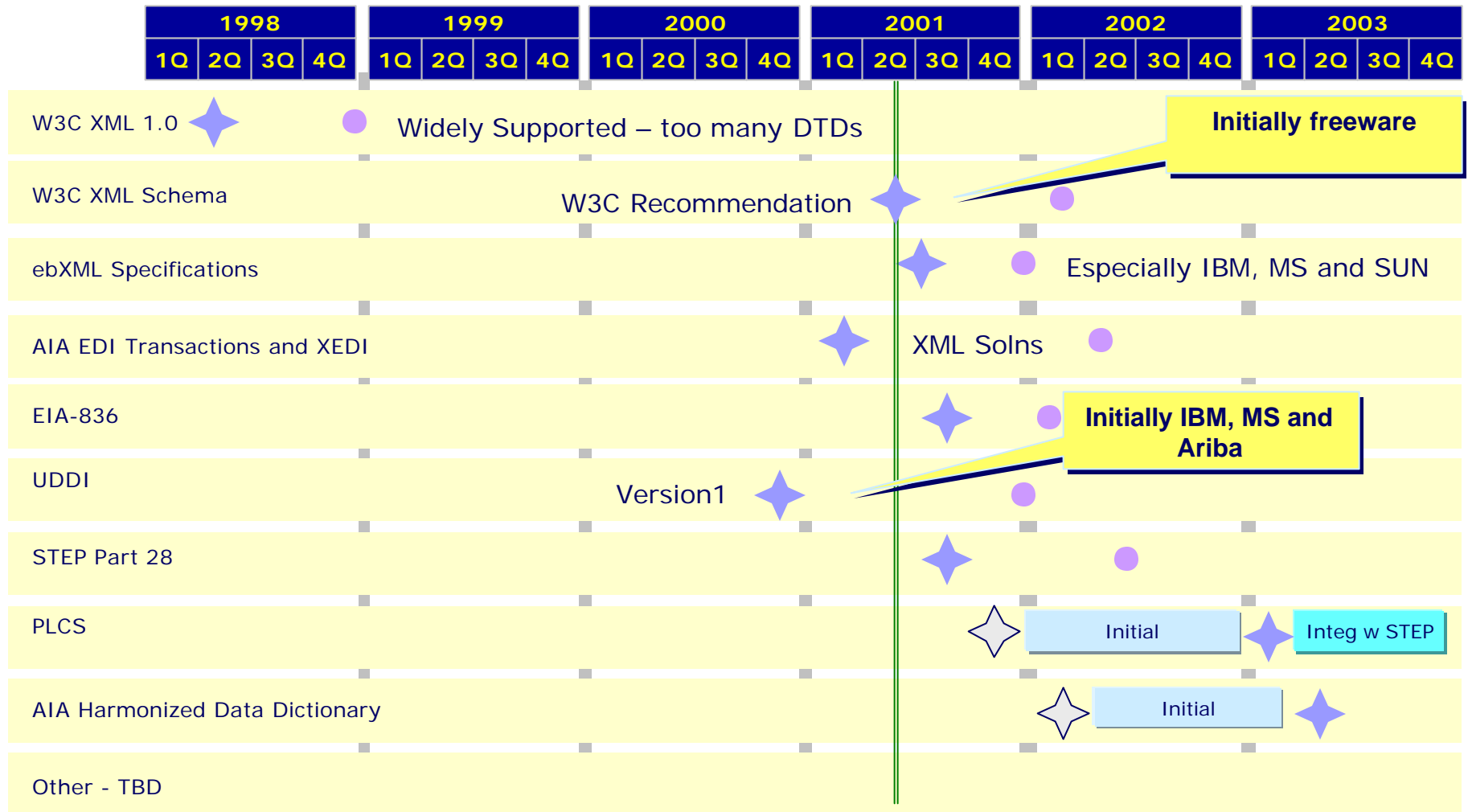
AIA's Proposed Harmonization Approach



Content of Industry-wide Repository



XML Standards Roadmap Summary



Web Site URLs

- W3C XML 1.0 Specification
 - <http://www.w3.org/TR/REC-xml>
- W3C XML Schema Specification
 - <http://www.w3.org/XML/Schema#dev>
- Global ebXML Architecture Specification
 - http://www.ebxml.org/specdrafts/approved_specs.htm
 - http://www.ebxml.org/specdrafts/specs_for_review.htm
- AIA Harmonized EDI Transactions
 - <http://www.aia-aerospace.org/edi/implcon.cfm>
- UDDI Specifications
 - <http://www.uddi.org/>
- EIA-836 Draft Standard
 - <http://www.dcnicn.com/cm/index.cfm>
- ISO 10303 STEP Standard
 - <http://www.nist.gov/sc4/www/stepdocs.htm>
- Product Life Cycle Support (PLCS)
 - <http://www.plcs.org/>